R E P O R T R E S U M E S

ED 020 789 PS 000 969

LANGUAGE CONTROL IN A GROUP OF HEAD START CHILDREN.

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REPORT NUMBER OEO-510
EDRS PRICE MF-$0.25 HC-$0.28 5P.

DESCRIPTORS- *LANGUAGE ABILITY, LANGUAGE DEVELOPMENT, MORPHEMES, SYNTAX, LANGUAGE PATTERNS, *LANGUAGE SKILLS, SOCIAL DIALECTS, BASIC SKILLS, TRANSFORMATIONS (LANGUAGE), *SPEECH SKILLS, *PRESCHOOL CHILDREN, *LANGUAGE TESTS, HEAD START,

TWENTY HEAD START PRESCHOOL CHILDREN WERE GIVEN THREE LANGUAGE TASKS DESIGNED TO MEASURE THEIR LANGUAGE DEVELOPMENT--(1) A PRODUCTION TASK REQUIRED THE CHILDREN TO ENGAGE IN FREE SPEECH. THE CHILDREN WERE ASKED TO ANSWER A QUESTION, TO DESCRIBE A SERIES OF PICTURES, AND TO RETELL A STORY. THE FREE SPEECH OF THE CHILDREN IN RESPONSE TO THESE SUB-TASKS WAS ANALYZED IN TERMS OF THE RANGE AND FREQUENCY OF SYNTACTIC STRUCTURES USED, THE NUMBER OF KERNEL AND TRANSFORMED SENTENCES USED, AND THE COMPLEXITY OF THE SYNTAX. THE DATA FROM THIS TASK IS NOT YET AVAILABLE. (2) AN IMITATION TASK REQUIRED THE CHILDREN TO REPEAT 20 SENTENCES USING 10 DIFFERENT SYNTACTIC STRUCTURES. EACH STRUCTURE WAS USED IN TWO SENTENCES. OF A POSSIBLE 400 CORRECT RESPONSES, 261 CORRECT RESPONSES WERE MADE. THE LENGTH OF THE SENTENCE WAS FOUND TO BE NEGATIVELY RELATED TO NUMBER OF CORRECT RESPONSES FOR ONE SET OF THE STRUCTURES. THERE WAS EVIDENCE OF MODIFICATION OF SENTENCES BY THE CHILDREN TO CONFORM THEM TO THEIR OWN LINGUISTIC SYSTEM. (3) THE SAME SENTENCES USED IN TASK NUMBER 2 WERE USED IN A COMPREHENSION TASK THAT REQUIRED THE CHILDREN, AFTER HEARING A SENTENCE, TO POINT TO THE PICTURE CORRESPONDING TO THAT SENTENCE FROM A THREE-PICTURE DISPLAY. CORRECT RESPONSES NUMBERED 266 OUT OF A POSSIBLE 400. LENGTH OF SENTENCE WAS NOT FOUND TO BE RELATED SIGNIFICANTLY TO THIS TASK. A RECOGNIZED PROBLEM IN INTERPRETING THE DATA FROM THESE TASKS IS CHOOSING CRITERIA THAT WILL RELIABLY INDICATE WHEN THE CHILD REALLY HAS CONTROL OF A PARTICULAR SYNTACTIC STRUCTURE. TOTAL CORRECT-RESPONSES, AS A CRITERION, DOES NOT INDICATE WHETHER THE CHILD CONSISTENTLY RESPONDED CORRECTLY ON A PARTICULAR SYNTACTIC STRUCTURE IN TASKS NUMBER 2 AND NUMBER 3. IF THE CONSISTENCY OF CORRECT RESPONSE CRITERION WERE USED ON THE DATA, THE TOTAL SCORE OF THE CHILDREN WOULD BE 64. (WD)

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ED020789

Language Control in a Group of Head Start Children

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Introduction

The research reported below was designed to study speech production, comprehension and imitation in the same group of children with the view that this assembly of studies will tell us much more about the child's control of the possibilities of the linguistic system than the study of a single process.

Procedure

Twenty children (11 boys and 9 girls), who were in the summer Head Start program, and whose average age was five years, were given three tasks which were designed so that several measurements of each child's linguistic development could be obtained.

1) Production Task: This consisted of three situations where the child's free speech was obtained. A) Child was asked questions, e.g., "What games do you like to play?"; B) Child was asked to describe a series of pictures; and C) Child was asked to retell a story when presented with a sequence of pictures previously used by the Experimenter to tell the story.

2) Imitation Task: After some practice, the child was asked to repeat after the Experimenter a set of 10 sentences. Each sentence incorporated a different syntactic structure. These structures were derived from a Chomskian (Transformational) analysis of English syntax. The following structures were tested, the passive, conjunction, adjective, relative clause,

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inversion, separation, possessive, negation, transformation object, and transformation-subordinate. For each structure two syntactically equivalent but semantically different forms were constructed, so that each child repeated 20 sentences.

3) Comprehension Task: The sentences that were used in the Imitation Task were selected because they could be translated into visual form for use in the Comprehension Task. In this latter task the child was asked, after some practice with similar materials, to listen to a sentence and then to point to the picture which corresponded to it from a display of three pictures. The picture set consisted of two different pictures which represented the two forms of the experimental syntactic structure to be tested, and a third, neutral picture which contained the same visual elements as the other two pictures except for the critical elements representing the syntactic structure.

Results and Discussion

Production Task

The processing of the data from the Production Task is still continuing, however, it can be said that the three main categories adopted for the analysis seem to be potentially quite fruitful for use in differentiating between the linguistic skills of both individuals and of groups. These categories are: A) Range of syntactic structures used by each child and their frequency of occurrence; B) The number of Base (Kernel) sentences and transformed sentences in the speech sample of each child; and finally C) The amount of syntactic complexity exhibited in each child's speech. (For this and other purposes a quantified index of syntactic complexity has been invented.)

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Imitation Task

Imitation responses were scored by using two categories of correct responding, one where the response was a perfect repetition of the sentence and the other where the critical structure was intact though some surrounding items were not, e.g., "The girl is pushed by the boy" given as "The boy is pushed by the girl" was scored as correct. The total number of correct responses on this task was 281 out of a possible 400. No probability value can be attached to this statistic as there seems to be no way of computing the chance level of an individual correct response. Length of the sentences was found to be a significant variable and it was associated negatively with the number of correct responses for one set of the structures.

A result that is of theoretical interest is that there was evidence of recoding of some sentences by the children. An example of this is the high frequency of occurrence of a zero-morpheme replacing a plural-morpheme as in "The dog eat and the cat sleep". The child who responds in this way seems to be filtering the sentence through his own linguistic system (i.e., dialect). This is evidence against the view expressed by some researchers (e.g., Roger Brown) that the child does not process linguistic material through his meaning system in imitation. Children using linguistic recoding in this experiment are exhibiting receptive bilingualism, that is, they understand the syntactic structure from the standard dialect, but probably do not produce it in their own dialect.

Comprehension Task

The total number of correct responses in the Comprehension Task was 266 out of a possible 400. A X^2 computed for the data was found to be significant beyond the .001 level. Length of the sentences was not found to be significantly related to the number of correct responses made to them.

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There were some large discrepancies between the group's responses to the Imitation and Comprehension Tasks on the same structures. A few of these discrepancies can be understood by referring to the children's dialect. The possessive is one example of a structure being infrequently imitated correctly ("She took the dog food."); however, this morphemic deletion does not affect performance in the Comprehension Task probably because the child understands this possessive structure in the standard dialect.

The Problem of Control

One problem that has to be faced in viewing the results of the Imitation and Comprehension tests is "What criteria should be used in determining whether a child has control of a particular syntactic structure?" The most stringent criterion that could be adopted in this experiment was that of 2 out of 2 correct responses on <u>both</u> the Imitation and Comprehension Tasks. Using this criterion of control the total score of the group was 64 (for Imitation alone the score was 120, for Comprehension alone the score was 99).

A rank order of "difficulty" was developed for the 10 structures based upon the number of times each structure was controlled by individual children. The order of difficulty, from most to least difficult, was relative clause, negation, possessive, transformation-subordinate (these last three were tied), passive, inversion, conjunction (these 3 were tied), adjective, separation and transformation-object. Two other rank orders of "difficulty" were drawn up based upon: A) <u>total</u> correct responses to each structure in the Comprehension and Imitation Tasks; and B) total of 2 correct responses made on <u>either</u> the Imitation <u>or</u> the Comprehension Task. The "A" and "B" totals represent two less stringent indices of control, however, rank order correlations between the hierarchies of "difficulty" representing the three definitions of control were significantly inter-correlated (Spearman's r's of .90).

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A quantitative index of syntactic complexity was developed for particular use in the experiment, although it is hoped that it will have general experimental applicability in work on child language development. The model is based upon Chomsky's theory of the organization of English syntax. In this theory the simplest sentences are described as Kernel sentences and they are of the kind "John hit the ball" i.e., simple, active, declarative sentences. More complex structures called transformations (i.e., all those used in the present experiment) are developed by application of the grammatical rules of the language to the Kernel structures. Syntactic structures differ in terms of the number and kind of rules applied to them. The index of syntactic complexity which was developed is based upon a weighting system applied to each kind of grammatical rule. The total number and kind of rules applied to a Kernel sentence to generate a transformed sentence were used as the determinants of the quantitative measure of the syntactic complexity of that sentence.

The index of structural complexity was used for the 10 experimental structures and they were rank ordered for complexity. Significant rank order correlations (r's = .6 to .8) were obtained between the rank order of the complexity scores for the 10 structures and the three rank orders reflecting the different measures of difficulty (or control). The significant correlations suggest that the index of syntactic complexity used is a valid one.